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SEMICONDUCTOR DEVICE

Patent Number: JP5166992
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Applicant(s): FUJITSU LTD

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Application Number: JP19910330742 19911213
Priority Number(s):
IPC Classification: H01L23/50; B65D85/00; B65D85/38
EC Classification:
Equivalents:

Abstract

PURPOSE:To accurately position a semiconductor device which is delivered as it is mounted on a protective frame by the use of protective frame.
CONSTITUTION:A semiconductor main body 16, a frame 18 provided outside outer leads 14b so as to surround the semiconductor main body 16, and a support 19 provided between the semiconductor main body 16 and the frame 18 to support the semiconductor main body 16 on the frame 18 are provided, where the frame 18 and the support 19 constitute a protective frame 17 of integral structure.

CLAIMS

[Claim(s)]
[Claim 1] The main part of a semiconductor device (16) characterized by providing the following, and the frame section arranged so that this main part of a semiconductor device (16) may be surrounded in an outside [outer lead / this / (14b)] position (18 23). While having this frame section (18 23) and the supporter (19) which makes this frame section (18 23) support ******, now cage this the main part of a semiconductor device (16) between these main parts of a semiconductor device (16) The semiconductor device characterized by for this frame section (18 23) and this supporter (19) resembling the protection frame (17 24) which metal material comes to form with the aforementioned die pad (12) in one, and constituting them more. Semiconductor device (11) The die pad which carries this semiconductor device (11) (12) The package made of a resin which closes this semiconductor device (11) (13) Two or more leads constituted by the inner lead (14a) connected to this semiconductor device (11), and the outer lead (14b) which extended to the exterior of this package made of a resin (13) (14)
[Claim 2] The semiconductor device of the claim 1 which forms the guide holes (20) for positioning this main part of a semiconductor device (16) in this protection frame (17), and is characterized by the bird clapper.
[Claim 3] The claim 1 which forms the bending section (22) in this protection frame (24), and is characterized by the bird clapper, or 2 semiconductor devices.
[Claim 4] This outer lead (14b) is the semiconductor device of the claim 3 which this bending section (22) has the bending direction selected in the direction which protects this outer lead (14b), and is characterized by the bird clapper by carrying out bending formation at the predetermined configuration.
[Claim 5] the claim 1 characterized by arranging an insulating resin tape (25) in a part of this frame section (18 24), or 4 -- inner -- a semiconductor device given in either
[Claim 6] The metal supporter material formed so that it might extend towards an outside in [main part / (16) / this / the main part of a semiconductor device (16) characterized by providing the following, and / of a semiconductor device] one (31), While being arranged so that this main part of a semiconductor device (16) may be surrounded in an outside [outer lead / this / (14b)] position The metal protection frame member (34 32- 37) which supports this main part of a semiconductor device (16) through this supporter material (31) by fixing this supporter material (31), and the semiconductor device characterized by being alike and being constituted more. Semiconductor device (11) The die pad which carries this semiconductor device (11) (12) The package made of a resin which closes this semiconductor device (11) (13) Two or more leads constituted by the inner lead (14a) connected with this semiconductor device (11), and the outer lead (14b) which extended to the exterior of this package made of a resin (13) (14)
[Claim 7] The semiconductor device of the claim 6 which forms the guide holes (20) for positioning this main part of a semiconductor device (16) in this protection frame member (34 32- 37) or this supporter material (31), and is characterized by the bird clapper.
[Claim 8] The claim 6 which forms the bending section (35) in this protection frame member (34), and is characterized by the bird clapper, or 7 semiconductor devices.
[Claim 9] This outer lead (14b) is the semiconductor device of the claim 8 which this bending section (35) has the bending direction selected in the direction which protects this outer lead (14b), and is characterized by the bird clapper by carrying out bending formation at the predetermined configuration.
[Claim 10] The claim 6 characterized by arranging an insulating resin tape (25) in a part of this protection frame member (34 32- 37), or 9 semiconductor devices.
[Claim 11] This supporter material (31) is the claim 6 or the semiconductor device of 10 characterized by being fixed to a protection frame member (34 32- 37) by the welding means.
[Claim 12] The frame section arranged so that this main part of a semiconductor device (16) may be surrounded in the main part of a semiconductor device (16) characterized by providing the following, and an outside [outer lead / this / (14b)] position (18), While having this frame section (18) and the supporter (19) which makes this frame section (18) support ******, now cage this the main part of a semiconductor device (16) between these main parts of a semiconductor device (16) The 1st protection frame member to which metal material comes to form this frame section (18) and this supporter (19) in one (51), The semiconductor device characterized by being constituted by the 2nd and 3rd protection frame members (52 53) arranged so that it may superimpose on the upper part and lower part with each on both sides of this frame section (18). Semiconductor device (11) The die pad which carries this semiconductor device (11) (12) The package made of a resin which closes this semiconductor device (11) (13) Two or more leads constituted by the inner lead (14a) connected with this semiconductor device (11), and the outer lead (14b) which extended to the exterior of this package made of a resin (13).
[Claim 13] this -- the semiconductor device of the claim 12 which forms the guide holes (20) for positioning this main part of a semiconductor device (16) to the 1st or 3rd protection frame member (51-53) or this supporter (19), and is characterized by the bird clapper
[Claim 14] this -- the claim 12 which forms the bending section (35) at least in one side of the 2nd or 3rd protection frame member (52 53), and is characterized by the bird clapper, or the semiconductor device of 13

[Claim 15] This outer lead (14b) is the semiconductor device of the claim 14 which this bending section (35) has the bending direction selected in the direction which protects this outer lead (14b), and is characterized by the bird clapper by carrying out bending formation at the predetermined configuration.
[Claim 16] this -- the claim 12 characterized by arranging an insulating resin tape (25) in a part of the 1st or 3rd protection frame member (51-53), or 15 -- inner -- a semiconductor device given in either
[Claim 17] this -- the claim 12 which the 1st or 3rd pr tection frame member (51-53) is fixed by the welding means in one, and is characterized by the bird clapper, or 16 -- inner -- a semiconductor device given in either
[Claim 18] this -- the 1st protection frame member (51) -- this -- with a welding position with the 2nd protection frame member (52) A welding position with the 3rd protection frame member (53) is selected in a different position. this -- the 1st protection frame member (51) -- this -- A hole (54) is formed. this -- the protection frame member (51) of the above 1st of the 3rd protection frame member (53) -- this -- a welding position with the 2nd protection frame member (52), and the position which counters -- the 1st recess -- A hole (55) is formed. this -- the protection frame member (51) of the above 1st of the 2nd protection frame member (52) -- this -- a welding position with the 3rd protection frame member (53), and the position which counters -- the 2nd recess -- A laser beam is irradiated. this -- the 1st and 2nd recess -- so that a hole (54 55) may be passed this -- the 1st protection frame member (51) -- this -- the 2nd protection frame member (52) -- and -- this -- the 1st protection frame member (51) -- this -- the semiconductor device according to claim 17 which carries out laser welding of the 3rd protection frame member (53), and is characterized by the bird clapper

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[Translation done.]

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is drawing showing the semiconductor device which is the 1st example of this invention.
[Drawing 2] It is drawing showing the modification of the semiconductor device which is the 1st example of this invention.
[Drawing 3] It is drawing showing an example of the bending section.
[Drawing 4] It is drawing showing the state where the insulating tape was arranged in the semiconductor device shown in drawing 2.
[Drawing 5] It is drawing showing the semiconductor device which is the 2nd example of this invention.
[Drawing 6] It is the exploded view showing the semiconductor device which is the 2nd example of this invention.
[Drawing 7] a protection frame -- it is drawing showing other examples of composition of a member
[Drawing 8] a protection frame -- it is drawing showing other examples of composition of a member
[Drawing 9] It is drawing showing the example which made leadframe structure supporter material and the protection frame member.
[Drawing 10] It is drawing showing the semiconductor device which is the 3rd example of this invention.
[Drawing 11] It is drawing showing the example which applied this invention to the semiconductor device which has various structures.
[Drawing 12] It is drawing showing the example which applied this invention to the semiconductor device which has various structures.
[Drawing 13] It is drawing showing the example which applied this invention to the semiconductor device which has various structures.
[Drawing 14] It is drawing for explaining an example of the conventional semiconductor device.
[Description of Notations]
10, 21, 30, 50 Semiconductor device
11 Semiconductor Device
12 Die Pad
13 Package
14 Lead
14a Inner lead
14b Outer lead
15 Wire
16 Main Part of Semiconductor Device
17 24 Protection frame
18 23 Frame section
19 Supporter
20, 40, 41 Guide holes
22 35 Bending section
25 Insulating Tape
31 36 Supporter material
32, 33, 34, and 37 a protection frame -- member
38 39 Leadframe
51 1st Protection Frame -- Member
52 2nd Protection Frame -- Member
53 3rd Protection Frame -- Member
54 The 1st Escapes and it is Hole.
55 The 2nd Escapes and it is Hole.

[Translation done.]

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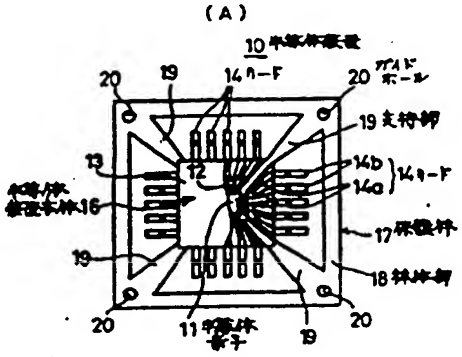
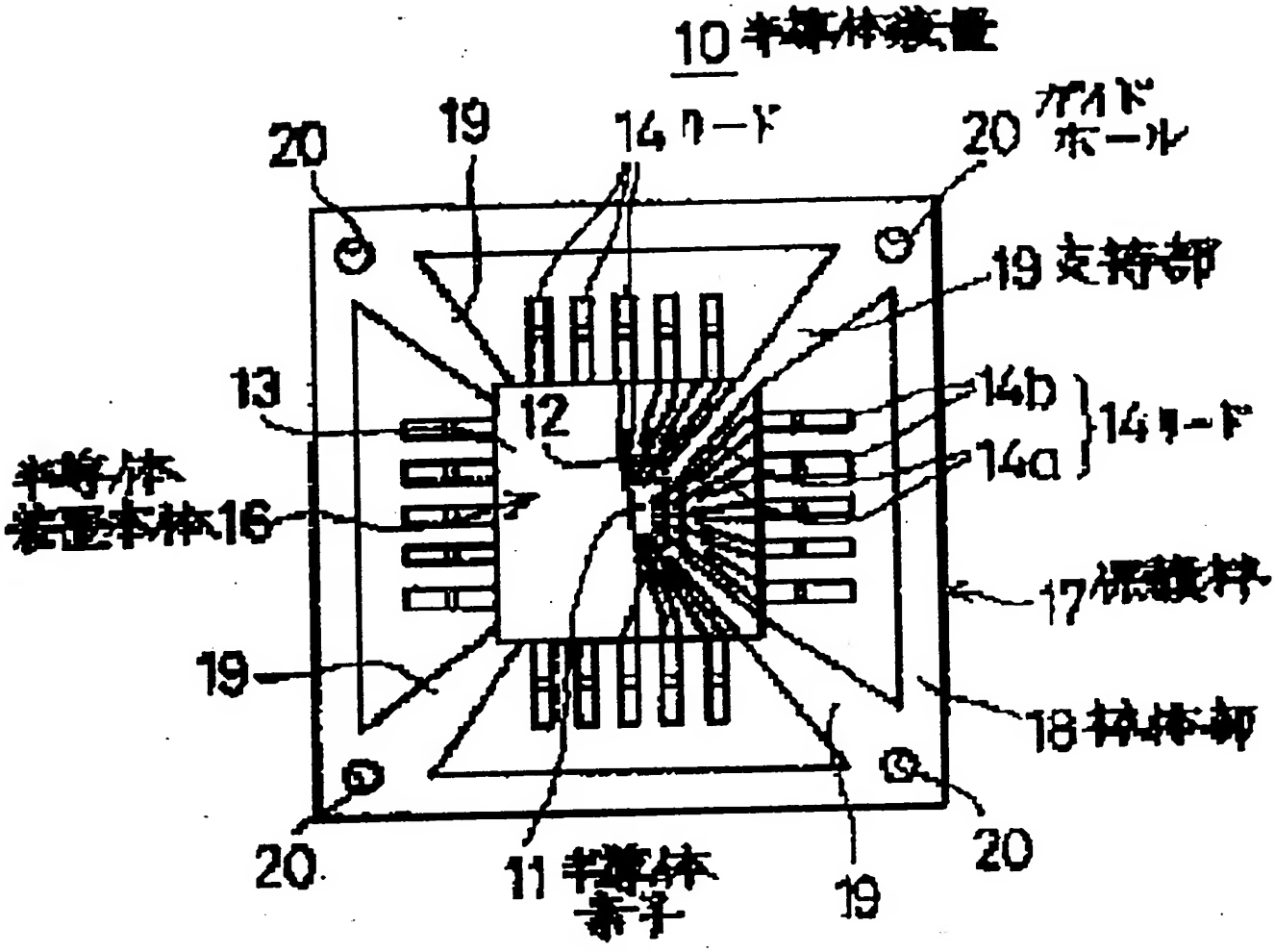
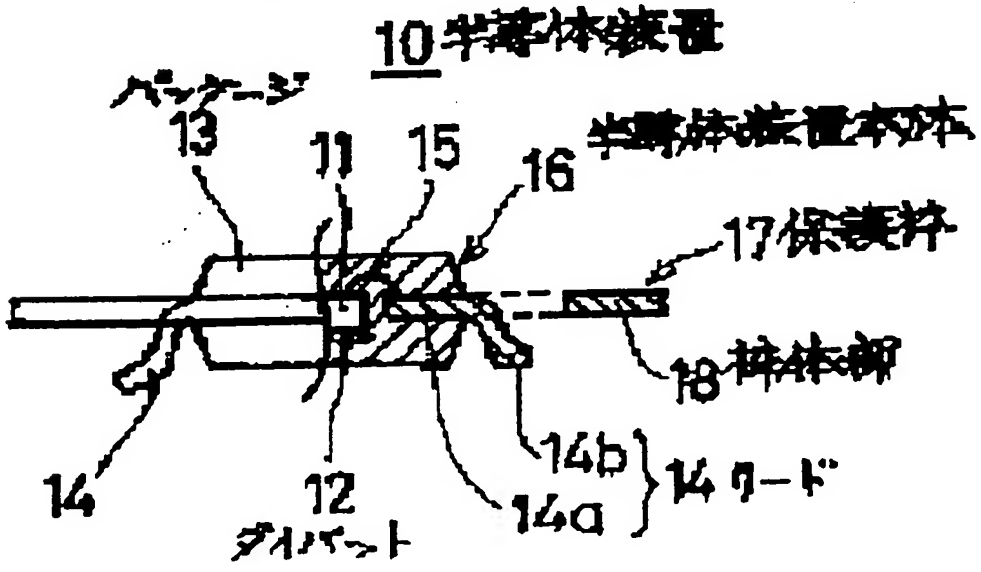
(54)【発明の名称】　半導体装置

(57)【要約】
【目的】本発明は保護枠に取り付けられた状態で出荷される半導体装置に関し、保護枠により高精度の位置決めを行うことを目的とする。
【構成】半導体装置本体１６と、アウターリード１４ｂより外側位置に半導体装置本体１６を囲繞するように配設される枠体部１８と、この枠体部１８と半導体装置本体１６との間に配設されており半導体装置本体１６を枠体部１８に支持させる支持部１９とを有すると共に、枠体部１８と支持部１９とが金属材により一体的に形成されてなる保護枠１７により構成する。




10 半導体装置
20
19
14 リード
20
ガイド
ホール
19 支持部
13
12
14b
14a
14 リード
半導体
装置本体16
17 保護材
19
18 枠体部
20
20
11 半導体
素子
19

(B)


10 半導体装置
パッケージ
13
11
15
16
半導体装置本体
17 保護材
18 枠体部
14b
14 リード
14
12
ダイパット
14a

13

により、半導体装置本体の保護をより確実に行うことができる。

【0067】また、折り曲げ部の折曲方向をアウターリードの折曲方向と同方向とすることにより、折曲されたことにより保護枠或いは保護枠部材より上方或いは下方に突出したアウターリードを折り曲げ部により保護することができる。

【0068】また、枠体部の一部に絶縁性の樹脂テープを配設することにより、半導体装置のハンドリングを容易に行うことができる。

【図面の簡単な説明】

【図1】本発明の第1実施例である半導体装置を示す図である。

【図2】本発明の第1実施例である半導体装置の変形例を示す図である。

【図3】折り曲げ部の一例を示す図である。

【図4】図2に示す半導体装置に絶縁テープを配設した状態を示す図である。

【図5】本発明の第2実施例である半導体装置を示す図である。

【図6】本発明の第2実施例である半導体装置を示す分解図である。

【図7】保護枠部材の他の構成例を示す図である。

【図8】保護枠部材の他の構成例を示す図である。

【図9】支持部材及び保護枠部材をリードフレーム構造とした例を示す図である。

【図10】本発明の第3実施例である半導体装置を示す図である。

【図11】本発明を種々の構造を有する半導体装置に適用した例を示す図である。

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【図12】本発明を種々の構造を有する半導体装置に適用した例を示す図である。

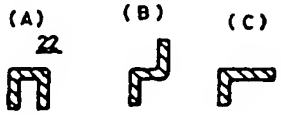
【図13】本発明を種々の構造を有する半導体装置に適用した例を示す図である。

【図14】従来の半導体装置の一例を説明するための図である。

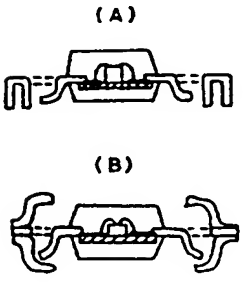
【符号の説明】

10，21，30，50　半導体装置
11　半導体素子
12　ダイパッド
13　パッケージ
14　リード
14a　インナーリード
14b　アウターリード
15　ワイヤ
16　半導体装置本体
17，24　保護枠
18，23　枠体部
19　支持部
20，40，41　ガイドホール
22，35　折り曲げ部
25　絶縁テープ
31，36　支持部材
32，33，34，37　保護枠部材
38，39　リードフレーム
51　第1の保護枠部材
52　第2の保護枠部材
53　第3の保護枠部材
54　第1の逃げ孔
55　第2の逃げ孔

【図3】



【図12】



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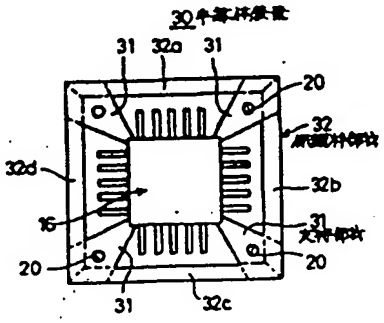

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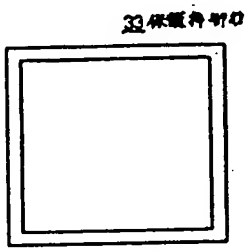
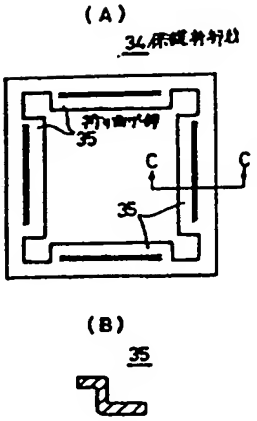
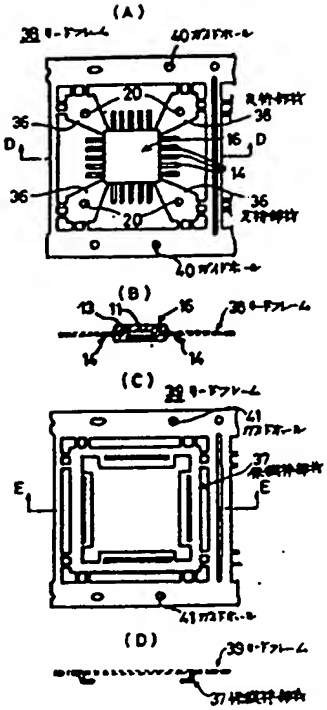


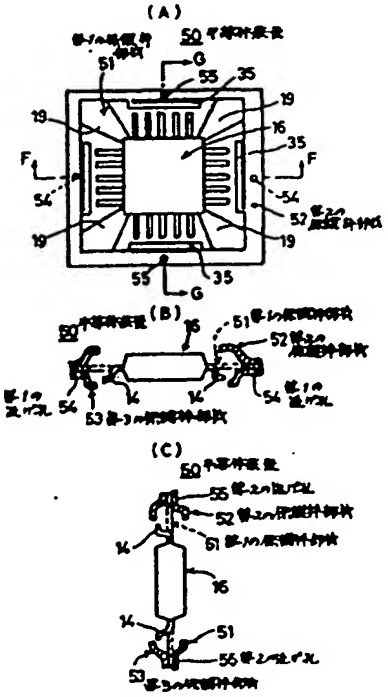
【図8】



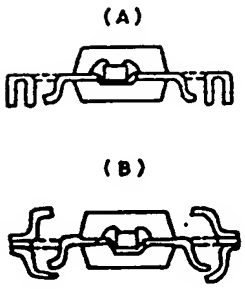
【図9】



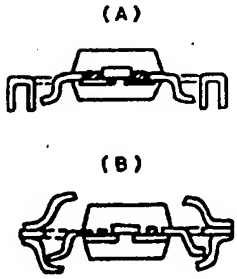
【図10】



【図11】



【図13】



【図14】